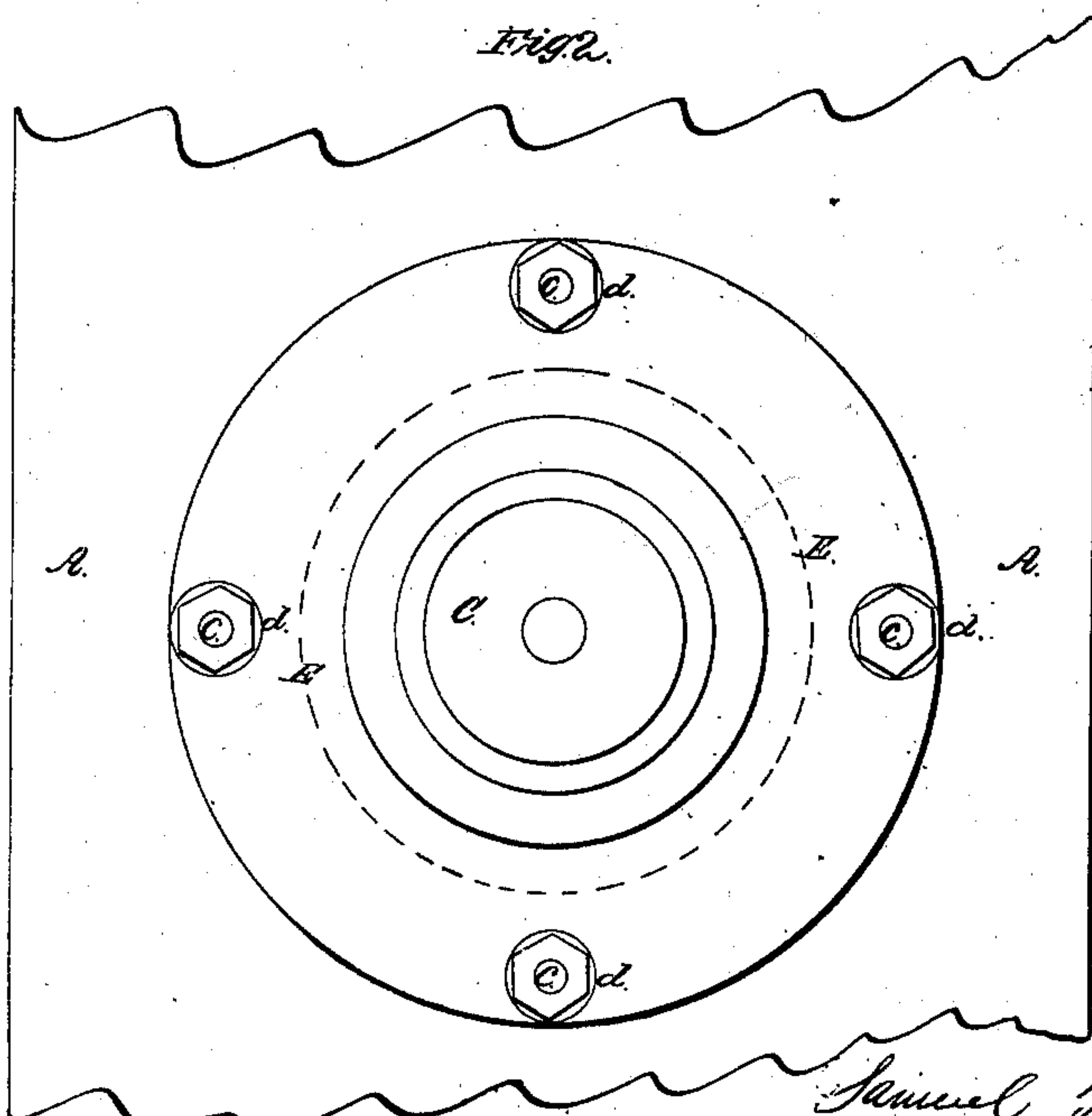
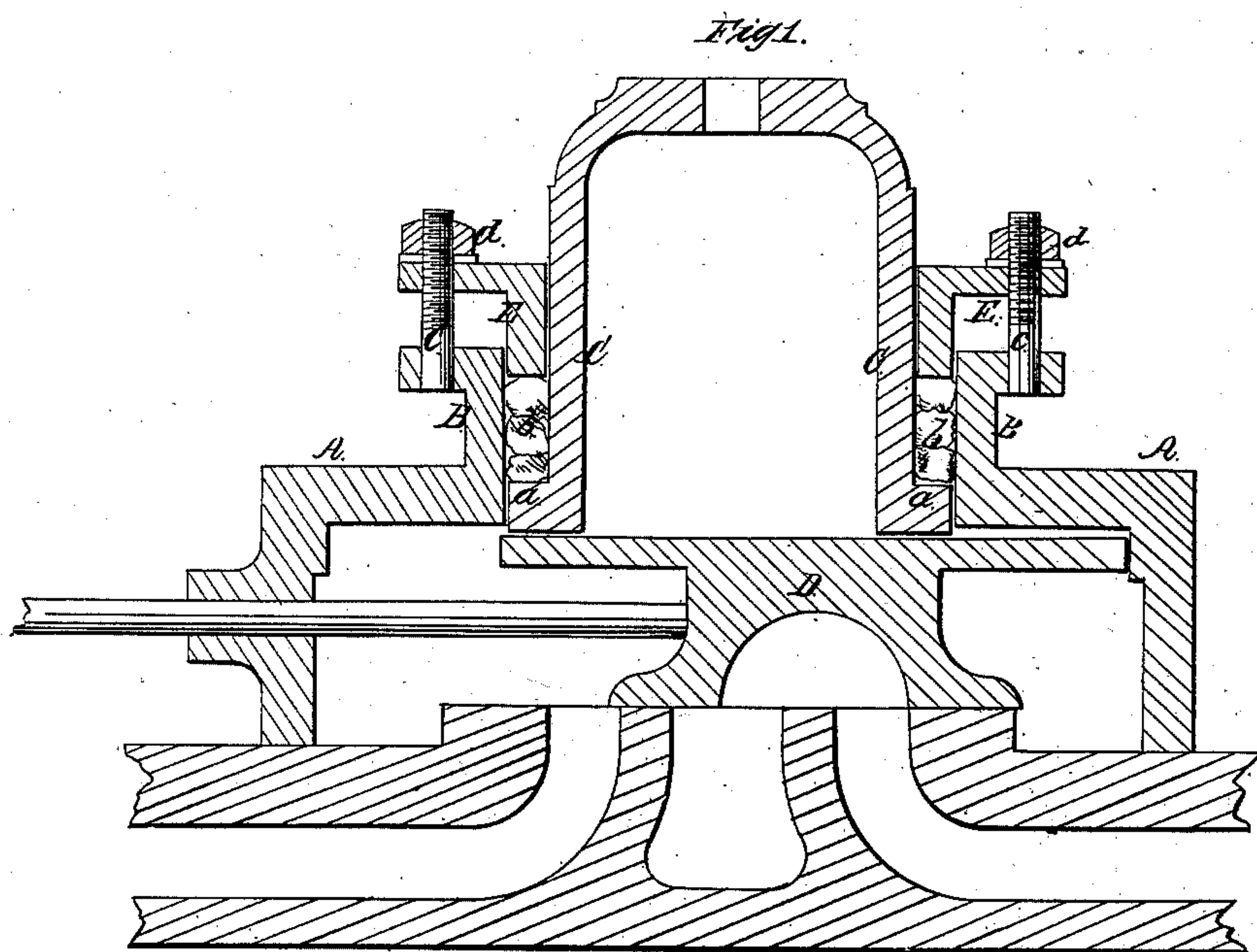


S. F. Hodge,
Steam Balanced Valve.
N^o 49,267. Patented Aug. 8, 1865.



Witnesses:

R. W. Campbell
E. Schaffer

Inventor.

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UNITED STATES PATENT OFFICE.

SAMUEL F. HODGE, OF DETROIT, MICHIGAN.

IMPROVEMENT IN SLIDE-VALVES FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. 49,267, dated August 8, 1865.

To all whom it may concern:

Be it known that I, SAMUEL F. HODGE, of Detroit, in the county of Wayne and State of Michigan, have invented a new and useful Improvement in Slide-Valves of Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a longitudinal section taken in a vertical plane through the improved valve. Fig. 2 is a top view of Fig. 1.

Similar letters of reference indicate corresponding parts in the two figures.

This invention relates to an improvement on slide-valves, which are relieved of undue steam-pressure by means of a hollow follower that is applied to the back of the valve and acted upon by means of an adjusting-screw, through the medium of a spring, which allows the valve to rise from its seat when necessary, and then forces it back to its seat.

The object of my invention is to diminish the pressure of steam upon the back of a slide-valve by means of a hollow flanged follower, which is held down upon the back of the valve by means of an adjustable stuffing-box gland, which is made to act upon the flange of the follower through the medium of an interposed elastic substance, as will be hereinafter described.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

The steam-chest A is constructed with an opening through its top which is surrounded by a flanged neck, B, through which a hollow flanged follower, C, passes, as shown in Fig. 1. The lower flanged end of the follower C is forced down upon the back of the slide-valve D by means of a flanged gland, E, between which and the flange *a* of the follower C is interposed india-rubber or other elastic substance, as indicated at *b*, Fig. 1, for the purpose of acting upon the follower with an elastic pressure.

The flange of the gland E projects over the flange of the neck or stuffing-box B, and receives through it screws *c c*, upon the ends of which nuts *d d* are screwed. By means of these

screws and nuts the gland E can be forced down upon the flange *a* of the follower, and this latter caused to press upon the back of the slide-valve D with any desired degree of force. At the same time the elastic substance *b* will be compressed and form a steam-tight packing around the circumference of the follower.

The area of the back of the valve D is somewhat greater than the area of the opening into the bottom of the follower C, so that this opening will not be exposed by the sliding movements of the valve.

The back of the valve may be enlarged in area by the application of a flat plate to it, as shown in Fig. 1, extending beyond both ends or by any other suitable means.

The valve, valve seat and ports, and the exhaust and inlet ports may be constructed and arranged in any well-known manner, and the steam-chest may be constructed in the usual manner.

The drawings represent the follower and its stuffing-box and gland as cylindrical; but it is evident that these parts may be made of a rectangular form without in any manner changing the nature of my invention.

The advantage of so constructing the follower that the gland E will act directly upon it near its lower end is that this follower will be held down upon the back of the valve with a uniform pressure at all points, and consequently the follower will not be liable to tilt and wear uneven or bind upon any one portion of the valve more than on another.

The object of the hollow follower is to prevent steam-pressure upon the back of the valve by excluding steam therefrom, and it is important to provide for holding the valve down upon its seat squarely, so that the surface of the valve will wear perfectly true. This can be done by the application of the adjustable gland to the circumference and near the lower end of said follower in a much better manner than by the use of a single center adjusting-screw acting upon the upper end of the follower, as hitherto.

The packing *b*, which is interposed between the flange of the follower and the lower end of the stuffing-box gland, is expanded in the act of forcing the follower down upon the back of the valve, and forms a steam-tight packing.

It also serves as a spring to allow the valve to lift from its seat under extraordinary circumstances.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination and arrangement of the

follower C, packing *b*, stuffing-box B, adjustable gland E, and valve D, substantially as described.

SAML. F. HODGE.

Witnesses:

THOS. S. CHRISTIE,

PORTER L. WEED.